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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/844,830	04/27/2001	Timothy Fries	355-A	3332

7590

08/27/2003

CIENA Corporation
Legal Department
1201 Winterson Road
Linthicum, MD 21090

EXAMINER

BELLO, AGUSTIN

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 08/27/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/844,830

Applicant(s)

FRIES ET AL.

Examiner

Agustin Bello

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7,8 and 10-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7,8 and 10-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/24/03 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5, 7-8, and 10-28 rejected under 35 U.S.C. 102(e) as being anticipated by Jeong (U.S. Patent 6,393,188).

Regarding claims 1 and 16, Jeong teaches a discrete dispersion compensation module (reference numeral 40 in Figure 1) for substantially compensating for dispersion and dispersion slope (column 2 lines 38-40) at a discrete location in an optical communications network transmitting signals on multiple wavelengths (e.g. wavelength division multiplexing column 1 lines 7-12), the dispersion compensation module comprising: a first dispersion compensating fiber (DCF 1 in Figure 2) providing dispersion compensation and dispersion slope compensation (column 2 lines 38-40) at the discrete location, said first dispersion compensating fiber having a

Art Unit: 2633

first nonzero dispersion coefficient (D_1 in Figure 2) and a first non-zero dispersion slope coefficient (S_1 in Figure 2); a second dispersion compensating fiber (DCF 2 in Figure 2) in optical communication with said first dispersion compensating fiber, said second dispersion compensating fiber having a second non-zero dispersion coefficient (D_2 in Figure 2) and a second non-zero dispersion slope coefficient (S_2 in Figure 2), wherein a length of said first dispersion compensating fiber and a length said second dispersion compensating fiber are selected to compensate dispersion and to compensate dispersion slope simultaneously (column 2 lines 44-54) for the multiple wavelengths at a discrete location along a transmission path of the optical communications network, wherein said first and second dispersion compensating fibers are contained within the discrete dispersion compensating module (reference numeral 40 in Figure 1) that is located at a discrete location along the transmission path and between a multiplexer and a demultiplexer (inherent in the wavelength division multiplexing column 1 lines 7-12) of the optical communications network.

Regarding claims 2 and 17, Jeong teaches the discrete dispersion compensation module of claim 1 wherein the first non-zero dispersion coefficient is different from the second non-zero dispersion coefficient (column 2 lines 44-54).

Regarding claims 3 and 18, Jeong teaches the discrete dispersion compensation module of claim 1 wherein the first non-zero dispersion slope coefficient is different from the second non-zero dispersion slope coefficient (column 2 lines 44-54).

Regarding claims 4 and 19, Jeong teaches the discrete dispersion compensation module of claim 1 wherein the transmission path (reference numeral 20 in Figure 1) is an inter-network element section of transmission fiber optically coupling the discrete dispersion compensation

module (reference numeral 40 in Figure 1) and a node (reference numeral 50 in Figure 1) of the optical communications network.

Regarding claims 5 and 20, Jeong teaches the discrete dispersion compensation module of claim 4 wherein the transmission path includes a component (reference numeral 30 in Figure 1) in optical communication with the inter-network element section of transmission fiber.

Regarding claims 7 and 21, Jeong teaches the discrete dispersion compensation module of claim 1 wherein the transmission path extends between a first terminal (reference numeral 10 in Figure 1) and a second terminal (reference numeral 50 in Figure 1) to define a terminal-to-terminal path and the discrete dispersion compensation module (reference numeral 40 in Figure 1) is optically coupled to the second terminal (as seen in Figure 1) and between the multiplexer and demultiplexer (inherent in the wavelength division multiplexing column 1 lines 7-12).

Regarding claims 8 and 22, Jeong teaches the discrete dispersion compensation module of claim 7 wherein the transmission path includes a component (reference numeral 30 in Figure 1) in optical communication with the terminal-to-terminal path.

Regarding claims 10 and 23, Jeong teaches the discrete dispersion compensation module of claim 1 wherein the length of first dispersion compensating fiber and the length of second dispersion compensating fiber are selected based on a mathematical solution (e.g. solution of Equations 6-8 in column 4) compensating dispersion in the transmission path and compensating dispersion slope in the transmission path.

Regarding claims 11 and 24, Jeong teaches the discrete dispersion compensation module of claim 10 wherein the mathematical solution is represented as:

$$D_{trans} * L_{trans} + D_{dcf1} * L_{dcf1} + D_{dcf2} * L_{dcf2} \sim 0 \text{ (Equation 7)}$$

Art Unit: 2633

$$L_{trans} * S_{trans} + L_{dcf1} * S_{dcf1} + L_{dcf2} S_{dcf2} \sim 0 \text{ (Equation 8)}$$

where D is dispersion coefficient, L is length and S is dispersion slope coefficient.

Regarding claims 12 and 25, Jeong teaches the discrete dispersion compensation module of claim 11 wherein the length of first dispersion compensating fiber and the length of second dispersion compensating fiber are selected based on discrete lengths approximating the mathematical solution (as indicated by the approximate symbol in equations 6-8).

Regarding claims 13 and 26, Jeong teaches the discrete dispersion compensation module of claim 10 wherein the mathematical solution compensates for Nth order dispersion effects (via the coupling of N dispersion compensating fibers in the compensation module) in the transmission path, where N is greater than 2 (as seen in Figure 2), said discrete dispersion compensation module further comprising and containing N dispersion compensating fibers (as recited in claim 1), including said first and second dispersion compensating fibers (as seen in Figure 2), in optical communication with each other, each of said N dispersion compensating fiber having a non-zero dispersion coefficient and a non-zero dispersion slope coefficient, wherein respective lengths of said N dispersion compensating fibers are selected to compensate 1st through Nth order dispersion effects (via the coupling of N dispersion compensating fibers in the compensation module) for the multiple wavelengths in the transmission path (in the wavelength division multiplexed system).

Regarding claim 14 and 27, Jeong teaches the discrete dispersion compensation module of claim 10 wherein the mathematical solution includes a value (e.g. D_{smf} in Equation 7) representing dispersion introduced by components in the transmission path.

Regarding claim 15 and 28, Jeong teaches the discrete dispersion compensation module of claim 10 wherein the mathematical solution includes a value (e.g. S_{smf} in Equation 8) representing dispersion slope introduced by components in the transmission path.

Response to Arguments

4. Applicant's arguments with respect to claims 1-5, 7-8, 10-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lu, Ishikawa, Dong, Vengsarkar, Akasaka, and Danzinger teach relevant art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

AB
August 18, 2003


JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600